

ABSTRACT

5 A device includes an element (e.g. in the shape of a sleeve) and a core located in
an interior volume defined by the element and at least partially surrounded by the
element. The element has two portions: one portion overlaps at least a region of the core
thereby to form a capacitor, while another portion surrounds the core thereby to form an
inductor. The device may further include an additional capacitor formed by another
element that is separated from the core but overlaps at least a region of the core when
10 viewed in a direction perpendicular to the core. The two elements substantially surround
the core. The core may be used to hold charge in a non-volatile manner, even when no
power is supplied to the device. The device can be manufactured in the normal manner,
by forming a via hole, depositing a conductive layer in the via hole to form a sleeve-
shaped element, forming a dielectric layer over the conductive layer so that the dielectric
15 layer defines an interior volume, and filling the interior volume with a plug of conductive
material that forms the core. An additional dielectric layer and an additional conductive
layer may be formed to implement the additional capacitor.